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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/831,566

05/10/2001

Manfred T. Reetz

STUDIEN 282-

6932

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NORRIS, MCLAUGHLIN & MARCUS, PA
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EXAMINER

METZMAIER, DANIEL S

ART UNIT

PAPER NUMBER

1712

MAIL DATE

DELIVERY MODE

03/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

Interview Summary	Application No. 09/831,566	Applicant(s) REETZ ET AL.	
	Examiner Daniel S. Metzmaier	Art Unit 1712	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Daniel S. Metzmaier. (3) ____.
- (2) Kurt G. Briscoe. (4) ____.

Date of Interview: 09 March 2007.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☒ Yes e) ☐ No.
If Yes, brief description: proposed amendments and remarks.

Claim(s) discussed: 21-45.


Identification of prior art discussed: Moumen et al. of record and Bonnemann et al.

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.


DANIEL S. METZMAIER
PRIMARY EXAMINER
ART UNIT 1712

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: discussed proposed amendments to the claims regarding the scope of the claims. Discussed the inconsistency between the transitional language in the preamble and the body of the claim. Discussed the possible separate amendments to the composition claims and the process claims. Discussed the fact that case is after final and said amendments would raise new issues. Discussed the capability of the materials as redispersible in water rather than water and ethylene glycol shown in the prior art.

PROPOSED—NOT FOR FILING**AMENDMENT AFTER FINAL REJECTION
EXPEDITED EXAMINING PROCEDURE**100716-36/Studien 282-KGB
A345**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANTS : MANFRED T. REETZ ET AL.
SERIAL NO. : 09/831,566
FILED : May 10, 2001
FOR : WATER-SOLUBLE NANOSTRUCTURED METAL-OXIDE
COLLOIDS AND METHOD FOR PREPARING SAME
ART UNIT : 1712
EXAMINER : D. Metzmaier

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 CFR § 1.116

SIR:

In response to the Office Action dated November 1, 2006, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

USSN 09/831,566 Page 1
Amendment Under 37 CFR § 1.116 filed March __, 2007

00097912

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-20. (Canceled)

21. (Currently Amended) ~~Additive-stabilized, 100% water-redispersible A~~
composition of matter consisting essentially of metal oxide colloids having particle sizes ranging from 0.5 - 5 nm, said metal oxide colloids comprising at least one metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids, wherein said metal oxide colloids are redispersible in a solution consisting of water.

22. (Currently Amended) ~~Colloids~~ Composition according to claim 21, ~~which~~
wherein the metal oxide colloids are monometal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids.

23. (Currently Amended) ~~Colloids~~ Composition according to claim 21, ~~which~~
wherein the metal oxide colloids are bimetal-oxide colloids or multimetal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a plurality of metals of groups

VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids.

24. (Currently Amended) Colloids Composition according to claim 21, ~~which~~ wherein the metal oxide colloids are bimetal-oxide colloids or multimetal-oxide colloids having particle sizes ranging from 0.5 - 5 nm, comprising a metal of a main group of the Periodic Table and one or more metals of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids.

25. (Currently Amended) Colloids Composition according to claim 24, wherein said metal of a main group of the Periodic Table is tin.

26. (Currently Amended) Colloids Composition according to claim 21, wherein said at least one water-soluble additive capable of stabilizing said metal oxide colloids is selected from the group consisting of amphiphilic betaines, cationic surfactants, anionic surfactants, nonionic surfactants, and water-soluble polymers.

27. (Currently Amended) A process for preparing a composition of matter ~~consisting essentially of metal oxide colloids, said colloids being additive-stabilized,~~ ~~100% water-redispersible metal oxide~~ colloids having particle sizes ranging from 0.5-5 nm, said metal oxide colloids comprising at least one metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable

of stabilizing said metal oxide colloids, wherein said metal oxide colloids are redispersible in a solution consisting of water, said process comprising hydrolyzing and condensing at least one salt of said at least one metal in an aqueous solution comprising a base in the presence of said at least one water-soluble additive capable of stabilizing said metal oxide colloids.

28. (Currently Amended) The process according to claim 27, which is for the preparation of a composition consisting essentially of monometal-oxide colloids, and comprises hydrolyzing and condensing a salt of a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said metal oxide colloids.

29. (Currently Amended) The process according to claim 27, which is for the preparation of a composition consisting essentially of bimetal-oxide colloids or multimetal-oxide colloids, and comprises hydrolyzing and condensing salts of a plurality of metals of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said metal oxide colloids.

30. (Currently Amended) The process according to claim 27, which is for the preparation of a composition consisting essentially of bimetal-oxide colloids, and comprises hydrolyzing and condensing a salt of a metal of a main group of the Periodic Table and a salt of a metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table in an

aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said metal oxide colloids.

31. (Previously Presented) The process according to claim 30, wherein said salt of said metal of a main group of the Periodic Table is SnCl_2 or SnCl_4 .

32. (Currently Amended) The process according to claim 27, wherein the water-soluble additive capable of stabilizing said metal oxide colloids is selected from the group consisting of amphiphilic betaines, cationic surfactants, anionic surfactants, nonionic surfactants, and water-soluble polymers.

33. (Previously Presented) The process according to claim 27, wherein the base is an alkali metal carbonate, an alkaline earth metal carbonate, an alkali metal bicarbonate, an alkaline earth metal bicarbonate, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal phosphate, an alkaline earth metal phosphate, an alkali metal hydrogen phosphate or an alkaline earth metal hydrogen phosphate.

34. (Previously Presented) The process according to claim 33, wherein the base is Li_2CO_3 , Na_2CO_3 , K_2CO_3 , Cs_2CO_3 or MgCO_3 .

35. (Previously Presented) The process according to claim 27, which is conducted at a temperature between 20 and 100°C.

36. (Previously Presented) The process according to claim 35, which is conducted at a temperature between 50 and 90°C.

37. (Currently Amended) The process according to claim 27, which is for the preparation of a composition consisting essentially of bimetal-oxide colloids or multi-metal-oxide colloids, and further comprises choosing the mass ratio of metal salts to control the mass ratio of metals in the bimetal-oxide colloids or multimetal-oxide colloids.

38. (Currently Amended) A process for preparing ~~water-redispersible, nanostructured~~, monometal colloids, bimetal colloids or multimetal colloids each having particle sizes ranging from 0.5 - 5 nm, wherein said monometal colloids, bimetal colloids or multimetal colloids are redispersible in a solution consisting of water, said process comprising:

- a) preparing a composition consisting essentially of monometal-oxide colloids, bimetal-oxide colloids or multimetal-oxide colloids by a process comprising hydrolyzing and condensing at least one metal salt in an aqueous solution comprising a base in the presence of a water-soluble additive capable of stabilizing said metal oxide colloids; and

- b) reducing said monometal-oxide colloids, bimetal-oxide colloids or multimetal-oxide colloids.

39. (Previously Presented) The process according to claim 38, which is conducted in the presence of a reduction agent selected from the group consisting of hydrogen, hypophosphite and formate.

40. (Currently Amended) A process for fixing colloids ~~according to claim 21~~ onto solid supports, said process comprising treating solid oxidic or non-oxidic solid materials with an aqueous solution of the colloids, wherein the colloids are metal oxide colloids having particle sizes ranging from 0.5 - 5 nm, said metal oxide colloids comprising at least one metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids, wherein said metal oxide colloids are redispersible in a solution consisting of water.

41. (Previously Presented) A process for fixing colloids onto solid supports, said process comprising preparing colloids by the process according to claim 38, and treating solid oxidic or non-oxidic solid materials with an aqueous solution of the colloids.

42. (Currently Amended) A process for immobilizing colloids ~~according to claim 21~~, said process comprising incorporating said colloids into sol-gel-materials,

wherein said colloids are metal oxide colloids having particle sizes ranging from 0.5 - 5 nm, said metal oxide colloids comprising at least one metal of groups VIb, VIIb, VIII, Ib or IIb of the Periodic Table, and stabilized by at least one water-soluble additive capable of stabilizing said metal oxide colloids, wherein said metal oxide colloids are redispersible in a solution consisting of water.

43. (Previously Presented) The process according to claim 42, wherein the sol-gel materials are prepared from gel precursors, which gel precursors are $\text{Si}(\text{OCH}_3)_4$ or mixtures of $\text{Si}(\text{OCH}_3)_4$ and $\text{C}_n\text{H}_{2n+1}\text{Si}(\text{OCH}_3)_3$ ($n=1$ to 4).

44. (Previously Presented) A process for immobilizing colloids, said process comprising preparing colloids by the process according to claim 38, and incorporating said colloids into sol-gel materials.

45. (Previously Presented) The process according to claim 44, wherein the sol-gel materials are prepared from gel precursors, which gel precursors are $\text{Si}(\text{OCH}_3)_4$ or mixtures of $\text{Si}(\text{OCH}_3)_4$ and $\text{C}_n\text{H}_{2n+1}\text{Si}(\text{OCH}_3)_3$ ($n=1$ to 4).

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefor. The Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

REMARKS

Applicants respectfully request reconsideration and allowance of this application in view of the amendments above and the following comments.

At the outset, Applicants wish to address the showing required by 37 CFR § 1.116(b) as to why this amendment is necessary and was not presented earlier. This amendment is needed to overcome the remaining issues, and, thus, is clearly necessary. At the very least, it is believed to eliminate many issues, and, thus, at a minimum advances the case, and places it in better condition for possible appeal. This amendment was not filed earlier because it was believed that Applicants' previous amendments and lines of argument placed the application in condition for allowance. Therefore, Applicants respectfully request that the Examiner enter and consider this amendment.

Claims 40, 42 and 43 were objected to under 35 USC § 1.75(c) as being of improper dependent form for failing to limit the subject matter of a previous claim. In response, claims 40 and 42 have been made independent. As claim 43 depends on claim 42, this objection is clearly overcome.

Claims 40, 42 and 43 were rejected under 35 USC § 112, second paragraph, as being indefinite. In response, Applicants submit that the above-discussed amendments to claims 40 and 42 moot this rejection.

Claims 21, 23, 24, 26, 27, 29, 30, 32-35 and 37 were rejected under 35 USC § 102(b) as being anticipated by Moumen et al. ("Moumen"), *Chemical Materials*, 8: 1128-1134 (1996). In response, Applicants point out that they previously argued that Moumen's colloids were redispersible in a mixture of *ethylene glycol and water*, and,

therefore, were different than the instant colloids, which are redispersible in *water alone*. The Examiner countered that there was no evidence that there was no evidence that Moumen's colloids would not be redispersible in water alone. However, Applicants respectfully submit that this can be reasonably inferred. Moumen would not have employed a mixture of ethylene glycol and water to stabilize his colloids if he truly believed they could be redispersed in water alone.

Further on this point, Applicants would call the Examiner's attention to the accompanying article by Moumen, appearing in *J. Phys. Chem.*, 100: 1867-1873 (1996). This article discusses Fe/Co mixed oxide nanoparticles in the form of colloids like those discussed in the Moumen reference on which the Examiner relies. In the last paragraph of the Experimental Section II, in the right-hand column on page 1867, the author's state: "**To prevent agglomeration**, magnetic particles [i.e., the Fe/Co colloids] are dispersed in 50% of ethylene glycol in water." Incidentally, this is the same mix of ethylene glycol and water used in the Moumen reference relied on by the Examiner. Clearly, Moumen's colloids would not be stable in water alone. Thus, Moumen has had to introduce ethylene glycol to provide stabilization, and to prevent agglomeration.

In view of the foregoing, Applicants respectfully submit that there is a clear difference between Moumen's materials and what is required by the present claims. Moumen's colloids are not redispersible in a solution consisting of water, as required by the instant claims. Consequently, Moumen cannot anticipate the instant claims.

Claims 21-24, 26-30, 32-35, 37-39 and 41 were rejected under 35 USC § 102(b) as being anticipated by Bonnemann et al. ("Bonnemann"), WO 96/17685. According to

the Examiner, the concentration of metal oxide in the colloid is not defined. In response, Applicants have amended the claims to require that the composition "consists essentially of metal oxide colloids." Certainly, this is different from Bonnemann, whose composition consists essentially only of metal colloids, *not* metal oxide colloids.

With respect to the issue of reduction, Applicants again respectfully submit that a person having ordinary skill in the art would understand reading Bonnemann that it is the metal salt that is reduced, not any hypothetical metal oxide. It would be a curious thing for Bonnemann to make an explicit reference to reduction, yet with the intention that this be for an inherently disclosed oxide.

In view of the foregoing, Applicants respectfully submit that there is a clear difference between Bonnemann's materials and what is required by the present claims. Bonnemann's materials do not consist essentially of metal oxide colloids.

Claim 36 was rejected under 35 USC § 103(a) as being obvious over Moumen. In response, Applicants point out that this rejection was premised on Moumen anticipating the basic features of the present invention, which, as discussed above, is not, in fact, the case. Consequently, Applicants believe that the Examiner would be fully justified to reconsider and withdraw this rejection as well.

Claim 44 was rejected under 35 USC § 103(a) as being obvious over Bonnemann in view of Day et al. ("Day"), US 4,197,187. In response, Applicants point out that this rejection was premised on Bonnemann anticipating the basic features of the present invention, which, as discussed above, is not, in fact, the case. Consequently, Applicants

believe that the Examiner would be fully justified to reconsider and withdraw this rejection as well.

Claims 21-24, 26-30, 32-35, 37-39 and 41 were rejected on the ground of obviousness-type double patenting as being unpatentable over claims 1-25 of US 6,090,746. In response, Applicants point out that this rejection was premised upon Bonnemann inherently producing metal oxide colloids, which, as discussed above, is not, in fact, the case. Consequently, Applicants believe that the Examiner would be fully justified to reconsider and withdraw this rejection as well.

Applicants believe that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicants also believe that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to telephone the undersigned at telephone number (212) 808-0700 so that the issue(s) might be promptly resolved.

Early and favorable action is earnestly solicited.

Respectfully submitted,
NORRIS McLAUGHLIN & MARCUS, P.A.

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Amendment Under 37 CFR § 1.116 filed March 2007

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